SMV800 SmartLine Multivariable Transmitter Specification 34-SM-03-92, November 2022

Introduction

The SMV800 combines sensor technologies for differential pressure, static pressure and temperature with the latest microprocessor technology to provide highly accurate data for measured variables, compensated flow and totalization over multiple communication protocols.

When paired with the other SmartLine unique features the SMV 800 delivers the highest levels of safety, reliability and efficiency available resulting into reduced project costs and start-up time while improving the productivity. The SmartLine family is also fully tested and compliant with Experion ® PKS providing the highest level of compatibility assurance and integration capabilities.

Best in Class Features:

o Accuracy up to 0.0375% for Differential pressure
o Accuracy up to 0.0375% for Static pressure
o Accuracy up to 0.2 Deg C for Temperature
o Mass Flow Reference Accuracy: up to 0.6%
o Totalizer Reference Accuracy: up to 0.4%
o Automatic static pressure & temperature compensation
o Rangeability up to 400:1
o Compensated flow response time of up to 2x per second
o Multiple local display capabilities
o External zero, span, & configuration capability
o Polarity insensitive electrical connections
o Comprehensive on-board diagnostic capabilities
o Integral Dual Seal design for highest safety based on ANSI/NFPA 70-202 and ANSI/ISA 12.27.0
o World class overpressure protection
o Modular design characteristics

Communications/Output Options:

o 4-20mA DC (Analog)
o Honeywell Digitally Enhanced (DE) Single or Multivariable
o HART ® (version 7.0)
o Modbus (RS-485, RTU) Half Duplex Communication

All transmitters are available with the above listed communication protocols

Figure 1 – SMV 800 Multivariable Transmitters feature field-proven piezoresistive sensor technology

Span & Range Limits:

Model PV1 - DP	URL inH$_2$O (bar)	LRL inH$_2$O (bar)	Min Span inH$_2$O (mbar)
SMA810	25 (0.0625)	-25 (-0.0625)	1.0 (0.0025)
SMA845	400 (1)	-400 (-1)	1.0 (0.0025)
SMG870	400 (1)	-400 (-1)	1.0 (0.0025)
SMG890	2000 (5)	-2000 (-5)	5.0 (0.0125)
PV2 - SP	psiA (bara)	psiA (bara)	psiA (bar)
SMA810	100 (7.0)	0 (0)	5 (0.35)
SMA845	1500 (104)	0 (0)	30 (2.1)
PV2 - SP	psig (barg)	psig (barg)	psig (barg
SMG870	4500 (310)	-14.7 (-1)	60 (4.2)
SMG890	4500 (310)	-14.7 (-1)	60 (4.2)

Description

Honeywell's SMV 800 Smart Multivariable Flow Transmitter extends our proven "smart" technology to the measurement of three separate process variables with the ability to calculate compensated mass or volume flow rate as a fourth process variable according to industry standard methods for air, gases, steam and liquids. SMV800 HART and Modbus devices can also calculate total mass or volume flow.

Unique Indication/Display

Advanced Graphics LCD Display Features

o   Modular (may be replaced in the field)
o   0, 90, 180, & 270 degree position adjustments
o   Standard and custom measurement units available
o   Up to eight display screens with 3 formats are possible (Large PV with Bar Graph or PV with Trend Graph)
o   Configurable screen rotation timing (3 to 30 sec)
o   Display Square Root capabilities may be set separately from the 4-20mA dc output signal for HART & DE devices
o   Multiple language capability (EN, DE, FR, IT, ES, RU, TU, CH, & JP)

Diagnostics

SmartLine transmitters all offer digitally accessible diagnostics which aid in providing advanced warning of possible failure events minimizing unplanned shutdowns, providing lower overall operational costs.

Configuration Tools

Integral Three Button Configuration Option

Suitable for all electrical and environmental requirements, SmartLine offers the ability to configure the transmitter and display via three externally accessible buttons except for the flow related parameters. Zero and span capabilities are also available optionally with HART and DE devices via three buttons with or without selection of a display option.

Handheld Configuration

SmartLine transmitters feature two-way communication and configuration capability between the operator and the transmitter. This is accomplished via Honeywell's field-rated Configuration Toolkit (MCT404).
The MCT404 is capable of field configuring HART and DE SMV devices for all parameters other than flow configuration, can be ordered for use in intrinsically safe environments.
All Honeywell transmitters are designed and tested for compliance with the offered communication protocols and are designed to operate with any properly validated handheld configuration device.

Measurement Types:

SMV is capable of mass and volume flow measurements for liquids, gases, and superheated and saturated steam.

Personal Computer Configuration

Honeywell's PC Based Configuration Toolkit SCT3000 provides an easy way to configure the SMV800 DE devices. SMV800 HART Device can be configured using Device Description based DCS Hosts and Asset Management Systems. HART devices can also be configured using PC based DTMs.
Honeywell's PC based configuration tool, 'SmartLine Modbus Manager' provides an easy and fast way to configure and troubleshoot the SMV Modbus devices including flow parameters. Configuration for multi-drop communication is also possible.
SMV800 DTM and PC based applications provide enhanced features like:

o   Easy to use Flow Configuration
o   Units Preference: Configurable Engineering units
o   Auto Calculation of Viscosity and Density Coefficients, Auto Calculation of K User, Beta Factor
o   Export and Import Configurations to/from external file with predefine schema/format
o   Summary Page.

Primary Element Compatibility

FLOW: The SMV is compatible with wide range of flow elements and provides dynamic calculation capabilities. SMV800 supports Advanced Algorithms and ASME 1989 Algorithms which is User selectable option in the DD / DTM Tools. Advanced Algorithm option supports the following Primary Elements with SMV800 HART, DE and Modbus Protocols:

o   Orifice Plates (ASME MFC-3M & AGA No 3/ISO 5167/GOST 8.586).
o   Integral Orifice
o   Small Bore Orifice (ASME MFC -14M)
o   Conditional Orifice (ISO5167-2003)
o   Nozzles (ASME MFC-3M/ISO 5167/GOST 8.586).
o   Venturi Tubes (ASME MFC-3M/ISO 5167/GOST).
o   Averaging Pitot Tubes
o   V-Cone®, Wafer Cone, Wedge.

ASME 1989 Algorithm Option supports the following Primary Elements with SMV800 HART, DE and Modbus protocol:

- o Orifice (Flange Taps D >/= 2.3 inches, Flange Taps 2 </= D </= 2.3, Corner Taps,Orifice D and D/2 Taps, Orifice 2.5 and 8D Taps)
- o Venturi (Machined Inlet, Rough Cast Inlet, Rough Welded Sheet-Iron Inlet, Leopold, Gerand, Venturi Tube, Low-Loss Venturi Tube)
- o Nozzle (Long Radius, Venturi Nozzle)
- o Various Preso Ellipse Pitot Tubes with varying Pipe Sizes
- o Other Pitot Tubes.

Primary Element Compatibility, continued

Fixed Parameters: Fixed Cd, Y1, Viscosity, Density are supported for user to customize the flow calculation.

Temperature: The SMV also has the following temperature input options:

- o **RTD** (2,3,4 wires): PT25, PT100*, PT200, PT500, PT1000 (*DE models use only PT100 RTD)
- o **Universal Input: RTD** PT25, PT100, PT200, PT500, PT1000 and **Thermocouple:**
  Type B*, E, J, K, N*, R*, S*, T.

  *B, N, R, S Type inputs are only available with HART and Modbus protocols.

Mass Flow Calculation
Mass Flow Compensation can be selected for Standard Compensations by user for Gas, Liquid and Steam without limitation on primary elements.

Mass Flow Compensation can be selected for Dynamic Compensation by the user from:
ASME-MFC-3M, ISO5167, Gost-8.586, for Orifice Plate, Nozzle and Venturri, AGA3 for Orifice, and Calculation Support for Averaging Pitot Tube, VCone, Wafer Cone, Wedge and Integral Orifice and Conditional Orifice are also available. Mass Flow Calculations also support user Fixed Input Parameters for Customizing the Calculations.

System Integration
- o SmartLine communications protocols all meet the most current published standards for HART, DE and Modbus
- o Integration with Honeywell's Experion PKS offers the following unique advantages.
  - o Messaging & Maintenance Mode Indication.
  - o Tamper reporting.
  - o FDM Plant Area Views with Health summaries.
  - o All SMV 800 units are Experion tested to provide the highest level of compatibility assurance.

Automatic Density Compensation
Using the configuration software, the SMV can be configured with the primary element type and the physical parameters of the fluid measured. This method dynamically compensates for fluid characteristics such as discharge coefficients, gas expansion factors, density, and viscosity as well as installation issues like upstream pipe size using the above referenced algorithms.

Basic Flow Density Compensation
This conventional calculation method is based on flow factors being manually entered.

Modular Design
To help contain maintenance & inventory costs, all SMV 800 transmitters are modular in design supporting the user's ability to replace meter bodies, indicators or change electronic modules without affecting overall performance or approval body certifications. Each meter body is uniquely characterized to provide in-tolerance performance over a wide range of application variations in temperature and pressure and due to the Honeywell advanced interface, electronic modules may be swapped without losing in-tolerance performance characteristics.

Modular Features
- o Meter body replacement
- o Replaceable electronics/comm modules*
- o Add or remove integral indicators*
- o Add or remove lightning protection (terminal connection) *

* Field replaceable in all electrical environments (including IS) except flameproof without violating agency approvals. With no performance effects, Honeywell's unique modularity results in lower inventory needs and lower overall operating costs. (Not available for Modbus)

Performance Specifications

Digital Reference Accuracy [2] (conformance to +/-3 Sigma)

<div align="center">Table 1</div>

	Model	URL	LRL	Min Span	Maximum Turndown Ratio	Stability	Reference Accuracy [1,2]
PV1 Differential	SMA810	25 in H_2O (62.5mbar)	-25 in H_2O (-62.5mbar)	1 in H_2O (2.5mbar)	25:1	0.5% URL /Year 2.0% URL/10 Years 3.0% URL/15 years	0.04% Span
	SMA845	400 in H_2O (1000mbar)	-400 in H_2O (-1000mbar)	1 in H_2O (2.5mbar)	400:1	0.02% URL/Year 0.1% URL/10 Years 0.15% URL/15 Years	
	SMG870						
	SMG890	2000 in H_2O (5 bar)	-2000 in H_2O (-5 bar)	5 in H_2O (0.0125 bar)	400:1		0.0375% Reading
PV2 Static	SMA810	100 psia (7 bara)	0 psia (0 bara)	5 psia (0.35 bara)	20:1	0.04% URL/Year 0.2% URL/10 Years 0.3% URL/15 Years	0.0375% Span
	SMA845	1500 psia (104 bara)	0 psia (0 bara)	30 psia (2.1 bara)	50:1	0.006% URL/Year 0.05% URL/10 Years 0.075% URL/15 Years	
	SMG870	4500 psig (310 barg)	-14.7 psig (-1.0 barg)	60 psig (4.2 barg)	75:1	0.015% URL/Year 0.08% URL/10 Years 0.12% URL/15 Years	
	SMG890	4500 psig (310 barg)	-14.7 psig (-1.0 barg)	60 psig (4.2 barg)	75:1		

Zero and span may be set anywhere within the listed (URL/LRL) range limits

Digital Accuracy at Specified Span, Temperature and Static Pressure
(Combined Zero & Span, conformance to +/-3 Sigma)

<div align="center">Table 2</div>

	Model	URL	Reference Turndown	Accuracy [1,2] [% of Span - SMA810, SMA845, SMG870 (PV1 & PV2) & SMG890 PV2] [% Reading - SMG890 PV1]			Temperature Effect (%-Span/Reading / 28°C (50°F))		Static Line Pressure Effect (% Span/Reading / 1000psi) [3]	
				A	B	C	D	E	F	G
PV1 Differential	SMA810	25 inH_2O	1:1	0.0150	0.025	25	0.100	0.100	0.180	0.080
	SMA845	400 inH_2O	16:1				0.075	0.025	0.200	0.025
	SMG870	400 inH_2O								
	SMG890	2000 inH_2O		0.0125		125	0.035	0.005	0.125	0.010
PV2 Static	SMA810	100psia	2:1	0.0125	0.025	50	0.05	0.050	n/a	
	SMA845	1500psia	10:1			150	0.055	0.020		
	SMG870	4500psig				450				
	SMG890	4500psig					0.02	0.015		

	Turn Down Effect	**Temp Effect**	**Static Effect** [3]
SMA810, SMA845, SMG870 (PV1 & PV2), SMG890 (PV2)	$\pm[A+B]$ if Span $\geq C$ $\pm\left[A+B\left(\dfrac{C}{Span}\right)\right]$ if Span $< C$	$\pm\left[D+E\left(\dfrac{URL}{Span}\right)\right]$	$\pm\left[F+G\left(\dfrac{URL}{Span}\right)\right]$
SMG890 (PV1)	$\pm[A+B]$ if reading $\geq C$ $\pm\left[A+B\left(\dfrac{C}{reading}\right)\right]$ if reading $< C$	$\pm\left[D+E\left(\dfrac{URL}{reading}\right)\right]$	$\pm\left[F+G\left(\dfrac{URL}{reading}\right)\right]$

Typical Calibration Frequency:

PV1 and PV2 calibration verification is recommended every four (4) years.

Notes:

[1.] Terminal based accuracy – Includes the combined effects of linearity, hysteresis and repeatability. Analog output adds 0.005% of span.

[2.] For zero based spans and reference conditions of 25°C (77°F), 0 psig static pressure, 10 to 55% RH and 316SS barrier diaphragm.

[3.] Static Line Pressure effect for SMA810 is % span/25 psi.

Performance Specifications

Digital PV3 Temperature Reference Accuracy [2] (conformance to +/-3 Sigma).Table 3

Input Type	Maximum Range Limits		Digital Accuracy (+/-)[1]	Min Span	Stability (% ULR/year)	Standards
RTD (2,3,4 wire)	° C	° F	° C	° C	%	
Pt25[4]	-200 to 850	-328 to 1562	1.0	1.0	0.01	IEC751:1990 (α=0.00385)
Pt100	-200 to 850	-328 to 1562	0.20	1.0	0.01	IEC751:1990 (α=0.00385)
Pt200[4]	-200 to 850	-328 to 1562	0.40	1.0	0.01	IEC751:1990 (α=0.00385)
Pt500[4]	-200 to 850	-328 to 1562	0.24	1.0	0.01	IEC751:1990 (α=0.00385)
Pt1000[4]	-200 to 500	-328 to 932	0.20	1.0	0.01	IEC751:1990 (α=0.00385)
Thermocouples[3]	° C	° F	° C	° C	%	
B[4]	200 to 1820	392 to 3308	2.00	1.0	0.01	ANSI/ASTM E-230 (ITS-90)
E	-200 to 1000	-328 to 1832	0.40	1.0	0.01	ANSI/ASTM E-230 (ITS-90)
J	-200 to 1200	-328 to 2192	0.50	1.0	0.01	ANSI/ASTM E-230 (ITS-90)
K	-200 to 1370	-328 to 2498	0.50	1.0	0.01	ANSI/ASTM E-230 (ITS-90)
N[4]	-200 to 1300	-328 to 2372	0.80	1.0	0.01	ANSI/ASTM E-230 (ITS-90)
R[4]	-50 to 1760	-58 to 3200	2.00	1.0	0.01	ANSI/ASTM E-230 (ITS-90)
S[4]	-50 to 1760	-58 to 3200	2.00	1.0	0.01	ANSI/ASTM E-230 (ITS-90)
T	-250 to 400	-418 to 752	0.40	1.0	0.01	ANSI/ASTM E-230 (ITS-90)

Notes:

[1.] Digital Accuracy is accuracy of the digital value accessed by the Host system and the handheld communicator

[2.] Analog Output Accuracy is applicable to the 4 to 20 mA Signal output

[3.] For TC inputs, CJ accuracy of 0.25°C shall be added to digital accuracy to calculate the total digital accuracy

[4.] These input types are only available with HART and Modbus protocols

Total analog accuracy is the sum of digital accuracy and 0.005% of span.
Ambient Temperature Effect Digital Accuracy: For RTD Inputs, 0.0015°C/°C/. For T/C Inputs: 0.005°C/°C
Analog Output: 0.0005% of span/°C

PV4 Mass Flow Reference Accuracy: 0.6% of flow range, over 20:1 flow range, calculated every 500ms[1,2]

[1.] Flow performance specifications assume dynamic compensation and is applicable for SMA845 and SMG870

[2.] Applicable standards and installations per ASME MFC 3M or ISO 5167-1 for un-calibrated orifice; Bigger than 2.8 inch
Pipe Diameter;
(0.2 < beta < 0.6 Orifice). DP Turn down 16:1; Reference accuracy does not include RTD sensor accuracy.

Operating Conditions – All Models

Parameter	Reference Condition		Rated Condition		Operative Limits		Transportation and Storage	
	°C	°F	°C	°F	°C	°F	°C	°F
Ambient Temperature[1]								
SMA810, SMA845, SMG870, SMG890	25±1	77±2	-40 to 85	-40 to 185	-40 to 85	-40 to 185	-55 to 120	-67 to 248
Meter Body Temperature[2]								
SMA810, SMA845, SMG870, SMG890	25±1	77±2	-40 to 110[1]	-40 to 230[1]	-40 to 125	-40 to 257	-55 to 120	-67 to 248
Humidity %RH	10 to 55		0 to 100		0 to 100		0 to 100	
Vac. Region – Min. Pressure **mmHg absolute** **inH$_2$O absolute**	Atmospheric Atmospheric		25 13		2 (short term)[3] 1 (short term)[3]			
Supply Voltage **Load Resistance**	**HART Models:** 10.8 to 42.4 Vdc at terminals (IS version limited to 30v) 0 to 1440 ohm (as shown in Figure 2) **DE Models:** 15V to 42.4 Vdc at terminals (IS version limited to 30V, XP and Non Sparking/ Non Incentive, 42 Volts.) 0 to 900 ohm (as shown in Figure 2) **Modbus (RS-485) Model**s: 9.5 to 30 Vdc at terminals							
Maximum Allowable Working Pressure (MAWP)[4,5] (SMV 800 products are rated to Maximum Allowable Working Pressure. MAWP depends on Approval Agency and transmitter materials of construction.)	**Standard:** SMA810 = 100 psia (7.0 bara)[6] SMA845 = 3000 psia (210 bara)[6] SMG870 = 4500 psig (310 barg)[6] SMG890 = 4500 psig (310 barg)[6]							

[1] LCD Display operating temperature -20 °C to +70 °C (-4 °F to 158 °F) . Storage temperature -30 °C to 80 °C (-22 °F to 176 °F).

[2] For CTFE fill fluid, the rating is -15 to 110 °C (5 to 230 °F).

[3] Short-term equals 2 hours at 70 °C (158°F).

[4] MAWP applies for temperatures -40 °C to 125 °C (-40 °F to 257 °F). Static Pressure Limit is de-rated to 3,000 psi for -26°C to -40°C (-14.8 °F to -40 °F). Use of graphite O-rings de-rates transmitter to 3,625 psi. Use of ½" - process adaptors with graphite o-rings de-rates transmitter to 3,000 psi.

[5] Consult factory for MAWP of SMV 800 transmitters with CRN approval.

[6] The MAWP is intended as a pressure safety limit. Honeywell does not recommend use above the PV2 Upper Range Limit.
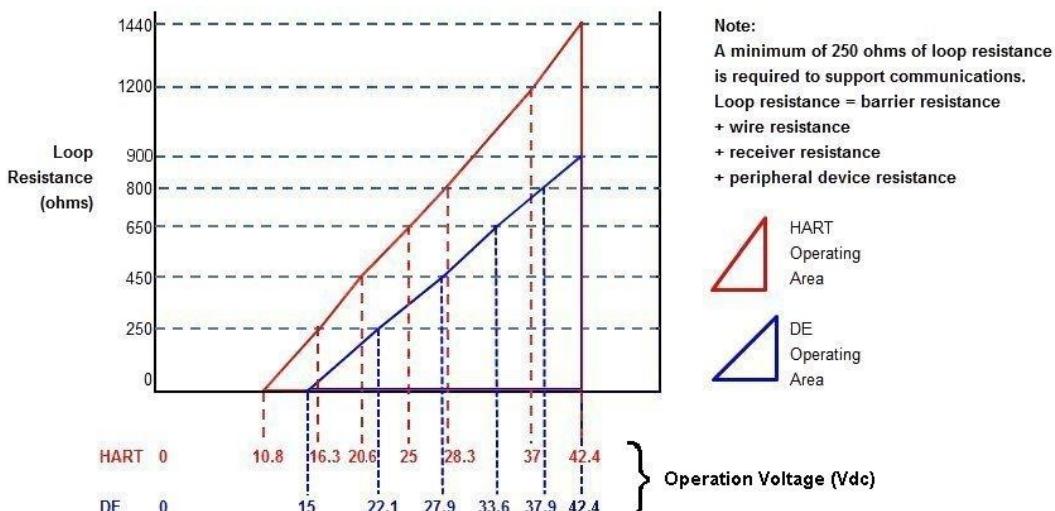

Figure 2 - Supply voltage and loop resistance chart & calculations (HART/DE Protocols)

Performance Under Rated Conditions – All Models

Parameter	Description
Analog Output Digital Communications:	Two-wire, 4 to 20 mA (HART & DE Transmitters only) Honeywell DE, HART 7 and Modbus protocol Modbus Model: RS-485 Half duplex communication interface. All transmitters, irrespective of protocol have polarity insensitive connection.

Output Failure Modes (DE and HART only)		**Honeywell Standard**	**NAMUR NE 43 Compliance**
	Normal Limits:	3.8 – 20.8 mA	3.8 – 20.5 mA
	Failure Mode:	≤ 3.6 mA and ≥ 21.0 mA	≤ 3.6 mA and ≥ 21.0 mA

Parameter	Description
Supply Voltage Effect	0.005% span per volt.
Transmitter Turn on Time (includes power up & test algorithms)	HART, DE and Modbus: 5.0 sec.
Response Time (DP) (delay + time constant)	**DE/HART Analog Output**: 144mS **Modbus.Turnaround delay time**: 0-250 ms (default 50 ms)
Damping Time Constant	**Modbus/HART DP/SP:** Adjustable from 0 to 32 seconds in 0.1 increments. **Default:** 0.50 seconds **Modbus/HART Temperature:** Damping limit is 0 to 102 **Modbus/HART FLOW:** Damping limit is 0 to 100 **DE DP/SP:** 0, 0.16, 0.32, 0.48, 1, 2, 4, 8, 16, 32 seconds. **Default:** 0.48 seconds **DE for Temperature PV:** Damping time 0, 0.3, 0.7, 1.5, 3.1, 6.3, 12.7, 25.5, 51.1, 102.3 **DE for Flow PV:** Damping time 0, 0.50,1, 2, 3, 4, 5 ,10, 50, 100
Vibration Effect SMA845, SMG870, SMG890	Less than +/- 0.1% of URL w/o damping Per IEC60770-1 field or pipeline, high vibration level (10-2000Hz: 0.21 displacement/3g max acceleration)
Electromagnetic Compatibility	EU EMC Directive 2014/30/EU (EN 61326-1)
Pressure Equipment Directive	EU PED 2014/68 EU
Isolation	DE/HART: 2000 Vdc (1400Vrms) Galvanic Isolation between inputs and outputs Modbus: 1000 Vdc Galvanic Isolation between Temperature Sensor inputs & RS485 outputs
Maximum Lead Wire Resistance	Thermocouples: 50 ohms/leg Pt100, Pt200, Pt500 and Pt1000 RTDs: 50 ohms/leg Pt25 RTD: 10 ohms per leg
Ambient Temperature Effect	**Digital Accuracy:** For RTD Inputs, 0.0015°C/°C For T/C Inputs: 0.005°C/°C
Temperature Sensor Burnout	**DE/HART:** Burnout detection is user selectable. Upscale or down scale with critical status message. For RTD type inputs; broken wire/wires will be indicated. **Modbus:** Critical status message indication is available.
Lightning Protection Option	**Leakage Current:** 10uA max @ 42.4VDC 93C **Impulse rating:** 8/20uS 5000A (>10 strikes) 10000A (1 strike min.) 10/1000uS 200A (> 300 strikes)

Materials Specifications

(See model selection guide for availability/restrictions with various models)

Parameter	Description
Barrier Diaphragms Material	316L SS, Hastelloy® C-276[2], Monel® 400 [3], Tantalum, Gold-plated 316L SS, Gold-plated Hastelloy® C-276, Gold-plated Monel® 400
Process Head Material	316 SS[4], Carbon Steel (Zinc-plated)[5], Hastelloy C-276[6], Monel 400 [7]
Vent/Drain Valves & Plugs [1]	316 SS[4], Hastelloy C-276[2], Monel 400 [7]
Head Gaskets	Glass-filled PTFE standard. Viton® and graphite are optional.
Meter Body Bolting	Carbon Steel (Zinc plated) standard. Options include 316 SS, NACE A286 SS bolts, Monel K500, Super Duplex and B7M.
Optional Adapter Flange and Bolts	Adapter Flange materials include 316 SS, Hastelloy C-276 and Monel 400. Bolt material for flanges is dependent on process head bolts material chosen. Standard adaptor o-ring material is glass-filled PTFE. Viton and graphite are optional.
Mounting Bracket	Carbon Steel (Zinc-plated) , 304 Stainless Steel or 316 Stainless Steel
Fill Fluid	Silicone Oil DC200, Silicone Oil 704, NEOBEE® M-20 or CTFE (Chlorotrifluoroethylene).
Electronic Housing	Pure Polyester Powder Coated Low Copper (<0.4%)-Aluminum. Meets Type 4X, IP66, & IP67. All stainless-steel housing is optional.
Mounting	Can be mounted in virtually any position using the standard mounting bracket. Bracket is designed to mount on 2-inch (50 mm) vertical or horizontal pipe. See **Figure 4.**
Process Connections	¼"- NPT or ½"- NPT with adapter (meets DIN requirements)
Wiring	Accepts up to 16 AWG (1.5 mm diameter). For RS-485 connection, 24 AWG shielded twisted pair cable with nominal characteristic impedance of 120 ohm is recommended.
Dimensions	See **Figure 5.**
Net Weight	8.3 pounds (3.8 Kg). With Aluminum Housing

[1] Vent/Drains are sealed with Teflon®

[2] Hastelloy C-276 or UNS N10276.

[3] Monel 400 or UNS N04400.

[4] Supplied as 316 SS or as Grade CF8M, the casting equivalent of 316 SS.

[5] Carbon Steel heads are zinc-plated and not recommended for water service due to hydrogen migration. For that service, use 316 stainless steel wetted Process Heads.

[6] Hastelloy C-276 or UNS N10276. Supplied as indicated or as Grade CW12MW, the casting equivalent of Hastelloy C-276.

[7] Monel 400 or UNS N04400. Supplied as indicated or as Grade M30C, the casting equivalent of Monel 400.

Communications Protocols & Diagnostics

HART Protocol

Version

HART 7

Power Supply

Voltage: 10.8 Vdc to 42.4 Vdc at terminals

Load: Maximum 1440 ohms See Figure 2.

Minimum Load: 0 ohms. (For handheld communications, a minimum load of 250 ohms is required)

Honeywell Digitally Enhanced (DE)

DE is a Honeywell proprietary protocol which provides multivariable DE communications between Honeywell DE enabled field devices and Hosts.

Power Supply

Voltage: 15 Vdc to 42.4 Vdc at terminals

Load: Maximum 900 ohms See Figure 2.

Modbus Protocol

Modbus provides easy integration of SMV devices with wide variety of host systems including Flow computers, RTUs, PLCs, Recorders, SCADA systems and supports multi-drop communication of up to 32 devices.

Optional integral indicator can display up to 8 parameters cyclically including parameters from Flow computer, RTU or SCADA system.

Low power consumption makes SMV Modbus transmitters ideal for solar powered installations.

Power Supply
Voltage: 9.5V to 30 Vdc at terminals.

Power Consumption: 70mW at 9.5V Supply.
This includes RS-485 communication at 9600 baud rate once per second without termination at room temperature.

Communication parameters

Item	Description
Communication protocol	2 wire half duplex RS485 Modbus RTU
Baud rate	1200, 2400,4800, 9600, 19200; Default is 9600
Data format	8- bit
Bit order	LSB
Start bit	1 bit
Stop bit	1 bit
Parity bit	Even, Odd or None; Default is None
Error check	16-bit CRC
Modbus address	1 to 247
Bus Termination	Internal AC termination; Standard external 120 ohm termination

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Standard Diagnostics

SMV 800 top-level diagnostics are reported as either critical or non-critical and readable via the DD/DTM tools or integral display as shown below.

Note: For HART and DE only

Critical Diagnostics	
HART DD/DTM Tools	**Display**
• Sensor Critical Fault	• Meter Body and/or • Meter Body Comm and/or • Temp Sense Board and/or • Temp Input and/or • Temp Sensor Comm
• SIL Diag Failure or • msp vcc fault and/or • Config Data Corrupt • DAC Failure	• Comm Module
• DAC Failure	• Comm Module Temp
• msp vcc fault	• msp vcc fault

Non-critical Diagnostics	
HART DD/DTM Tools	**Display**
• Local Display	• Display Setup
• Fixed Current Mode	• Analog Out Mode
• Comm Sec NC Fault	• N/A
• Sensing Sec NC Fault	• Temp cal Correct • DP Zero Correct and/or • DP Span Correct and/or • Meter Body Input
• Sensor Over Temperature	• Temp Module Temp and/or • Meter Body Temp
• PV Out Of Range	• PV Out Of Range
• No Fact Calib	• Pressure Fac Cal and/or • Temp Fac Cal
• No DAC Compensation	• DAC Temp Comp
• N/A	• Temp Cal Correct
• LRV Set Err. Zero Config Button	• N/A
• URV Set Err. Span Config Button	• N/A
• CJ Out of Limit	• CJ Range
• AO Out of Range	• N/A
• Sensor Input Open	• Temp Input and/or • Temp Input TB6
• Loop Current Noise	• N/A
• Sensor Unreliable Comm	• Meter Body Comm and/or • Temp Comm
• Tamper Alarm	• N/A
• No DAC Calibration	• N/A
• Low Supply Voltage	• Supply Voltage
• Totalizer Reached Max. Value	• Totalizer Max.
• Flow Calculation Details	• Flow Divide by 0 and/or • Flow Sqrt of Neg and/or • Flow Direction and/or • Flow SP/PT Comp
• DP/SP/PT/FLOW Simulation Mode	• DP Simulation and/or • SP Simulation and/or • PT Simulation and/or • Flow Simulation
• Sensor In Low Power Mode	• N/A
• Sensor input out of range	• Temp Input Range
• Totalizer mapped to PV and stopped	• Tot PV Mapping
• No Flow Output	• No Flow Output

Note: For Modbus only

Critical Diagnostics	
Modbus Configuration Host	**Display**
Diagnostic Failure	Comm Module
RAM Failure	
ROM Failure	
Program Flow Failure	
Config Data Corrupt	
Pressure Sensor Comm Timeout	Meter Body Comm
Temp Sensor Comm Timeout	Temp Sensr Comm
Comm Vcc Failure	Comm VCC Fault
Pressure Sensing Failure	Meter body
Temp Sensing Failure	Temp Sensr Board and/or Temp Input
Meterbody Failure	Meter body
Pressure Sensor Charactarization corrupt	
Pressure Suspect Input	
Pressure Sensor RAM DB Fault	
Pressure NVM Corrupt	
Pressure Sensor RAM Corrupt	
Pressure Sensor Code Corrupt	
Pressure Sensor Flow Failure	
Temp Sensor Input Failure	Temp Input and/or Temp Sensr Board
Temp Suspect Input	
Temp Sensor Char CRC Failure	
Temp Sensor NVM Corrupt	
Temp Sensor RAM Failure	
Temp Sensor Code Corrupt	
Temp Sensor Flow Failure	

Non - Critical Diagnostics	
Modbus Configuration Host	**Display**
Bad DP	N/A
Bad MBT	N/A
Bad PT	N/A
Bad SP	N/A
Bad Flow	N/A
Bad Totalizer	N/A
DP Above High Limit	DP Above High Limit
DP Below Low Limit	DP Below Low Limit
SP Above High Limit	SP Above High Limit
SP Below Low Limit	SP Below Low Limit
PT Above High Limit	PT Above High Limit
PT Below Low Limit	PT Below Low Limit
MBT Above Limit	MBT Above Limit
MBT Below Limit	MBT Below Limit
Flow Above High Limit	Flow Above High Limit
Flow Below Low Limit	Flow Below Low Limit
Comm Sec NC Failure	N/A
Sensing Sec NC Failure	N/A
CJ Out Of Limit	CJ Range
No Factory Calibration	Pressure Fac Cal* and/or Temp Fac Cal
Sensor Unreliable Communication	Meter Body Comm
Tamper Alarm	N/A
Low Supply Voltage	Supply voltages
Device Warm Reset	N/A

Display Communication Failure	N/A
Display NVM Corrupt	Display Setup
Communication Module VCC Failure	N/A
Transmitter Supply Failure	N/A
Totalizer Reached Max. Value	Totalizer Reached Max. Value
Sensor Over Temperature	Meter Body Temp
Sensor Input Open	Temp Input
Sensor Input Out Of Range	Temp Input Range
CJ CT Delta Warning	N/A
Flow Calculation Fault	Flow Divide by 0 and/or Flow Sqrt of Neg and/or Flow Direction and/or Flow SP/PT Comp
No Flow Output	Flow Output
Temperature module ADC Reference Failure	Temp Input Range
Temperature Module Unreliable Communication	Temp Comm
Temperature module Factory Calibration missing	Temp Fac Cal
Temperature Sensor Over Temperature	Temp Module Temp
Excess Calibration Correction	Temp Cal correct
User Corrects Activated	N/A
Sensor input bad	Meter Body
Sensor/CJ Bad	Meter Body
Sensor Input Failure	Temp Input
Low Supply	Supply voltage
Excess Zero Correction	DP Zero Corrects
Excess Span Correction	DP Span Corrects
Char Calc Error	N/A
Sensor Overload	Meter Body Inp
Sensor RAM DB Failure	N/A
Press No Fact Calib	Pres Fac Cal
Pressure Module Unreliable Communication	Meter Body Comm
Press Sensor Over Temperature	Meter Body Temp

Hazardous Location Approval Certifications:
HART and DE Communications

MSG CODE	AGENCY	TYPE OF PROTECTION	Electrical Parameters	Ambient Temperature
A	FM Approvals™	**Explosion proof:** Class I, Division 1, Groups A, B, C, D Class I, Zone 0/1, AEx db IIC T6..T5 Ga/Gb **Dust Ignition Proof:** Class II, Division 1, Groups E, F, G; Suitable for Division 1, Class III; Class II, Zone 21, AEx tb IIIC T 95°C Db	Note 1	T95 °C /T5: -50 °C to 85°C T6: -50 °C to 65°C
		Intrinsically Safe: Class I, II, III, Division 1, Groups A, B, C, D, E, F, G Class I Zone 0 AEx ia IIC T4 Ga	Note 2	T4: -50°C to 70°C
		Non-Incendive and Intrinsically Safe: Class I, Division 2, Groups A, B, C, D Class I Zone 2 AEx nA IIC T4 Gc Class I Zone 2 AEx ic IIC T4 Gc	Note 1	T4: -50°C to 85°C
		Enclosure: Type 4X/ IP66/ IP67		
		Standards: FM 3600:2018; ANSI/ ISA 60079-0: 2013; FM 3615:2018; ANSI/ ISA 60079-1 :2015; FM 3616: 2011 ; ANSI/ ISA 60079-31 :2015; FM 3610:2018; ANSI/ ISA 60079-11 :2014; FM 3810 : 2018; ANSI/ ISA 60079-26 :2017; FM 3611:2018; ANSI/ ISA 60079-15 : 2013; ANSI/ ISA 61010-1: 2004;NEMA 250 : 2003 ; ANSI/ IEC 60529 : 2004		
B	CSA-Canada	**Explosion proof:** Class I, Division 1, Groups A, B, C, D **Dust Ignition Proof:** Class II, III, Division 1, Groups E, F, G Suitable for Division 1, Class III; Zone 0/1, Ex db IIC T6..T5 Ga/Gb Class I, Zone 0/1, AEx db IIC T6..T5 Ga/Gb Ex tb IIIC T 95°C Db Class II, Zone 21, AEx tb IIIC T 95°C Db	Note 1	T5: -50 °C to 85°C T6: -50 °C to 65 °C
		Intrinsically Safe: Class I, II, III, Division 1, Groups A, B, C, D, E, F, G; Ex ia IIC T4 Ga	Note 2	T4: -50°C to 70°C
		Non-Incendive and Intrinsically Safe: Class I, Division 2, Groups A, B, C, D Ex nA IIC T4 Gc Class I Zone 2 AEx nA IIC T4 Gc	Note 1	T4: -50°C to 85°C
		Enclosure: Type 4X/ IP66/ IP67		
		Standards: CSA C22.2 No 0: 2010 (R2015); CSA C22.2 No. 0-M91; CSA C22.2 No 25:2017; CSA C22.2 No 30M; 1986(R2016);CSA C22.2 No 61010-1: 2012 (R2017); CAN/ CSA-C22.2 No.157: 1992(R2016); CSA C22.2 No 213: 2017; CSA C22.2 No 60529:2016; CSA C22.2 No 60079-0:2015; CSA C22.2 No 60079-1:2016; CSA C22.2 60079-11:2014; CSA C22.2 60079-15:2016; CSA C22.2 60079-31:2015; ISA 12.12.01:2017; ANSI/UL 61010-1: 2016; ANSI/ UL 60079-0:2013(R2017); ANSI/ UL 60079-1:2015; ANSI/ UL 60079-11:2014; ANSI/ UL 60079-15:2013(R2017); ANSI/ UL 60079-26 :2017; ANSI/ UL 60079-31 :2015; ANSI/ IEC 60529-2004(R2011); ANSI/UL 122701: 2017; UL 913:2015; UL 916: 2015; FM3615: 2006; FM 3616: 2011; FM 3600: 2011; ANSI/UL 50E: 2015		

C	ATEX	**Flameproof:** Sira 15ATEX2039X II 1/2 G Ex db IIC T6..T5 Ga/Gb II 2 D Ex tb IIIC T 95ºC..T125ºC Db	Note 1	T5/ T95ºC: -50 ºC to 85ºC T6: -50 ºC to 65ºC
		Intrinsically Safe: Sira 15ATEX2039X II 1 G Ex ia IIC T4 Ga	Note 2	T4: -50ºC to 70ºC
		Non Sparking and Intrinsically Safe: Sira12ATEX4234X II 3 G Ex ec IIC T4 Gc II 3 G Ex ic IIC T4 Gc	Note 1 Note 2	T4: -50ºC to 85ºC
		Standards: E EN 60079-0: 2018; EN 60079-1: 2014; EN 60079-11: 2012; EN 60079-31: 2014; EN 60079-26: 2015; EN 60079-7: 2015/A1: 2018		
		Flameproof: Sira 15ATEX2039X II 1/2 G Ex db IIC T6..T5 Ga/Gb II 2 D Ex tb IIIC T 95ºC..T125ºC Db		
		Enclosure: IP66/ IP67		
D	IECEx	**Intrinsically Safe:** IECEx SIR 15.0022X Ex ia IIC T4 Ga	Note 2	T4: -50ºC to 70ºC
		Non Sparking: IECEx SIR 15.0022X Ex ec IIC T4 Gc Ex ic IIC T4 Gc	Note 1 Note 2	T4: -50ºC to 85ºC
		Flameproof: Ex db IIC T6..T5 Ga/Gb Ex tb IIIC T 95ºC..125 ºC Db	Note 1	T5: -50 ºC to 85ºC T6: -50 ºC to 65ºC
		Enclosure: IP66/ IP67		
		Standards: IEC 60079-0: 2017; IEC 60079-1:2014; IEC 60079-11: 2011;IEC 60079-7: 2018; IEC 60079-31: 2013; IEC 60079-26: 2014		
E	SAEx (South Africa)	**Intrinsically Safe:** Ex ia IIC T4 Ga	Note 2	T4: -50ºC to 70ºC
		Non Sparking: Ex ec IIC Gc	Note 1	T4: -50ºC to 85ºC
		Flameproof: Ex db IIC T6..T5 Ga/Gb Ex tb IIIC T95ºC..T125 ºC Db	Note 1	T5: -50 ºC to 85ºC T6: -50 ºC to 65ºC
		Enclosure: IP66/ IP67		
F	INMETRO (Brazil)	**Intrinsically Safe:** Ex ia IIC Ga	Note 2	T4: -50ºC to 70ºC
		Non Sparking: Ex ec IIC T4 Gc	Note 1	T4: -50ºC to 85ºC
		Flameproof: Ex db IIC T6..T5 Ga/Gb Ex tb IIIC T 95ºC..T125 ºC Db	Note 1	T5: -50 ºC to 85ºC T6: -50 ºC to 65ºC
		Enclosure: IP66/ IP67		
		Standards: ABNT NBR IEC 60079-0:2013 (IEC 60079-0:2011); ABNT NBR IEC 60079-1:2009 (IEC 60079-1:2007); ABNT NBR IEC 60079-11:2013 (IEC 60079-11:2011); ABNT NBR IEC 60079-15:2012 (IEC 60079-15:2010); ABNT NBR IEC 60079-26:2008 (IEC 60079-26:2006); ABNT NBR IEC 60079-31:2014 (IEC 60079-31:2013).		

G	NEPSI (CHINA)	**Intrinsically Safe:** Ex ia IIC T4 Ga	Note 2	T4: -50ºC to 70ºC
		Non Sparking: Ex nA IIC T4 Gc	Note 1	T4: -50ºC to 85ºC
		Flameproof: Ex d IIC T6..T5 Ga/Gb Ex tb IIIC Db T95ºC..T125 ºC Db	Note 1	T5: -50 ºC to 85ºC T6: -50 ºC to 65ºC
		Enclosure: IP66/ IP67		
H	KOSHA (Korea)	**Flameproof:** Ex d IIC T6..T5 Ex tD A21 T 95ºC..T125 ºC	Note 1	T5: -50 ºC to 85ºC T6: -50 ºC to 65ºC
		Intrinsically Safe: Ex ia IIC Ga	Note 2	T4: -50ºC to 70ºC
I	EAC Ex (Russia, Belarus and Kazakhstan)	Ex d IIC T6..T5 Ga/Gb Ex tb IIIC T95ºC Db	Note 1	T5: -50 ºC to 85ºC T6: -50 ºC to 65ºC
		Intrinsically Safe: Ex ia IIC T4 Ga	Note 2	T4: -50 ºC to 70ºC
		Non Sparking: 2 Ex nA IIC T4 Gc	Note 1	T4: -50ºC to 85ºC
		Enclosure : IP 66/67		
K	UATR (Ukraine)	II 1/ 2 G Ex db IIC T6..T5 Ga/Gb	Note 1	T5: -50 ºC to 85ºC T6: -50 ºC to 65ºC
		Intrinsically Safe: Ex ia IIC T4 Ga	Note 2	T4: -50 ºC to 70ºC T4: -50ºC to 45ºC FISCO
		Enclosure : IP 66/67		
1	ATEX and IECEx	Combined ATEX and IECEX See codes C and D	Note 2	T4: -50ºC to 70ºC T4: -50ºC to 45ºC FISCO

Notes

1. Operating Parameters:

        Voltage= 11 to 42 V   Current= 4-20 mA Normal (3.8 – 23 mA Faults)

2. Intrinsically Safe Entity Parameters

        Vmax= Ui= 30 V   Imax= Ii = 225mA C_i =4 nF L_i= 0 uH P_i = 0.9 W

SIL 2/3 Certification	IEC 61508 SIL 2 for non-redundant use and SIL 3 for redundant use according to EXIDA and TÜV Nord Sys Tec GmbH & Co. KG under the following standards: IEC61508-1: 2010; IEC 61508-2: 2010; IEC61508-3: 2010.

MODBUS Communications

MSG CODE	AGENCY	TYPE OF PROTECTION	Ambient Temperature
6	FM Approvals™	**Explosion proof:** Class I, Division 1, Groups A, B, C, D Class I, Zone 0/1, AEx db IIC T6..T5 Ga/Gb **Dust Ignition Proof:** Class II, Division 1, Groups E, F, G; Suitable for Division 1, Class III; Class II, Zone 21, AEx tb IIIC T 95°C Db	T95 °C /T5: -50 °C to 85°C T6: -50 °C to 65°C
		Non-Incendive Class I, Division 2, Groups A, B, C, D Class I Zone 2 AEx nA IIC T4 Gc	T4: -50°C to 85°C
		Enclosure: Type 4X/ IP66/ IP67	
		Standards: FM 3600:2018; FM 3610: 2018; ANSI/ ISA 60079-0: 2013; FM 3615:2018; ANSI/ ISA 60079-1 :2015; FM 3616 : 2011 ; ANSI/ ISA 60079-31 :2015; FM 3810 : 2018; ANSI/ ISA 60079-26 :2017; FM 3611:2018; ANSI/ ISA 60079-15 : 2013; FM 3810 : 2005; ANSI/ ISA 61010-1: 2004;NEMA 250 : 2003 ; ANSI/ IEC 60529 : 2004	
7	CSA-Canada	**Explosion proof:** Class I, Division 1, Groups A, B, C, D **Dust Ignition Proof:** Class II, III, Division 1, Groups E, F, G Suitable for Division 1, Class III; Zone 0/1, Ex db IIC T6..T5 Ga/Gb Class I, Zone 0/1, AEx db IIC T6..T5 Ga/Gb Ex tb IIIC T 95°C Db Class II, Zone 21, AEx tb IIIC T 95°C Db	T5: -50 °C to 85°C T6: -50 °C to 65 °C
		Non-Incendive Class I, Division 2, Groups A, B, C, D Ex nA IIC T4 Gc Class I Zone 2 AEx nA IIC T4 Gc	T4: -50°C to 85°C
		Enclosure: Type 4X/ IP66/ IP67	
		Standards: CSA C22.2 No 0: 2010(R2015); CSA C22.2 No. 94-M91; CSA C22.2 No 25:2017; CSA C22.2 No 30M; 1986(R2016);CSA No 61010-1: 2012(R2017); CSA C22.2 No 213: 2017; CSA C22.2 No 60529:2016; CSA C22.2 No 60079-0:2015; CSA C22.2 No 60079-1:2016;; CSA C22.2 60079-15:2016; CSA C22.2 No 60079-26: 2016; CSA C22.2 60079-31:2015; ANSI/UL 12.12.01:2017; ANSI/UL 61010-1: 2016; ANSI/ UL 60079-0:2013(R2017); ANSI/ ISA 60079-1:2015; ANSI/ UL 60079-15:2013(R2017); ANSI/ UL 60079-26 :2017; ANSI/ UL 60079-31 :2015; ANSI/IEC 60529: 2004(R2011); ANSI/ UL 913:2015; ANSI/ UL 916: 2015; ANSI/ UL 122701: 2017; FM 3615: 2006; FM 3600: 2011; ANSI/UL 50E: 2015	
8	ATEX	**Flameproof:** Sira 15ATEX2039X II 1/2 G Ex db IIC T6..T5 Ga/Gb II 2 D Ex tb IIIC T 95°C..T125°C Db	T5/ T95°C: -50 °C to 85°C T6: -50 °C to 65°C
		Non Sparking Sira12ATEX4234X II 3 G Ex ec IIC T4 Gc	T4: -50°C to 85°C
		Standards: EN 60079-0: 2018; EN 60079-1 :2014; EN 60079-31 : 2014; EN 60079-26 :2015; ; EN 60079-7: 2015/A1: 2018	
		Enclosure: IP66/ IP67	
9	IECEx	**Non Sparking:** IECEx SIR 15.0022X Ex ec IIC T4 Gc	T4: -50°C to 85°C
		Flameproof: Ex db IIC T6..T5 Ga/Gb Ex tb IIIC T 95°C..125 °C Db	T5: -50 °C to 85°C T6: -50 °C to 65°C
		Enclosure: IP66/ IP67	
		Standards: IEC 60079-0: 2018; IEC 60079-1 :2014; IEC 60079-7: 2018; IEC 60079-31: 2013; IEC 60079-26: 2014	

Other Certification Options

Materials

o   NACE MRO175, MRO103, ISO15156

Temperature Sensor Wiring Diagram
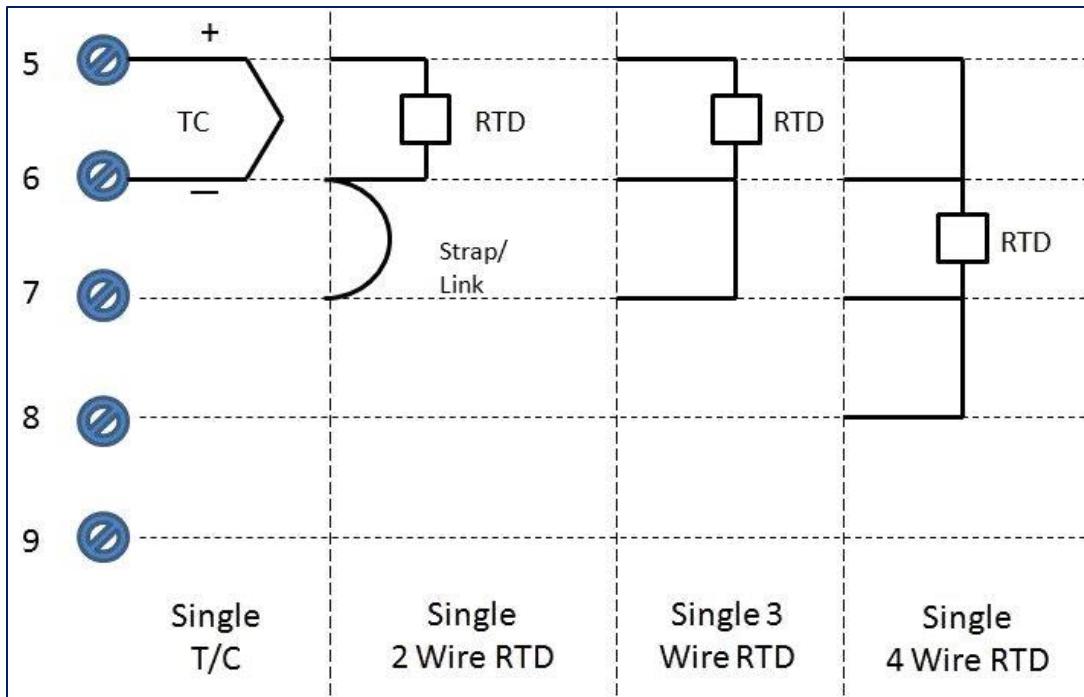
Figure 3 – Temperature Sensor Wiring Diagram

Mounting & Dimensional Drawings

Reference Dimensions: $\dfrac{\text{millimeters}}{\text{inches}}$
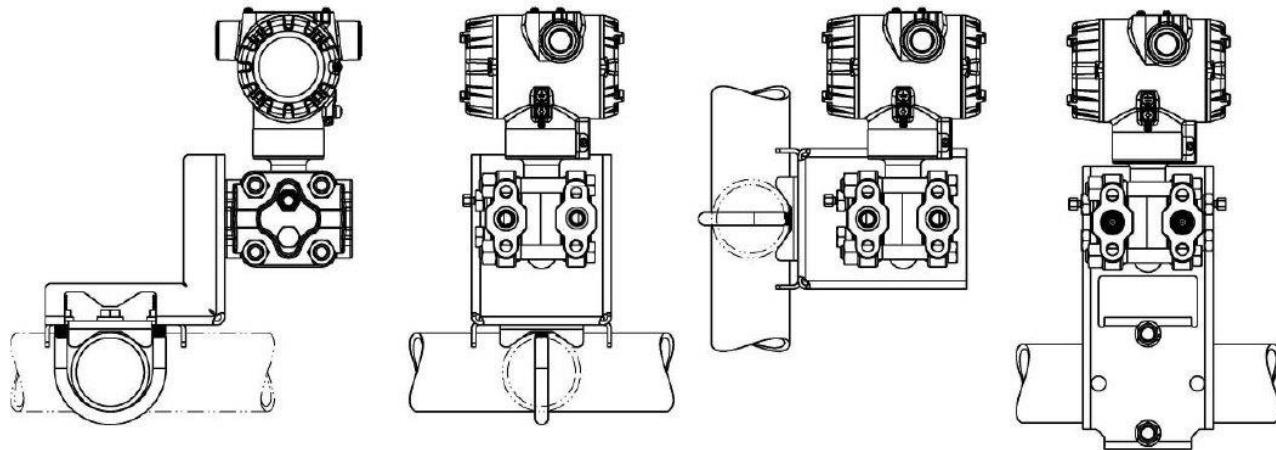

**Figure 4 – Mounting Configurations**
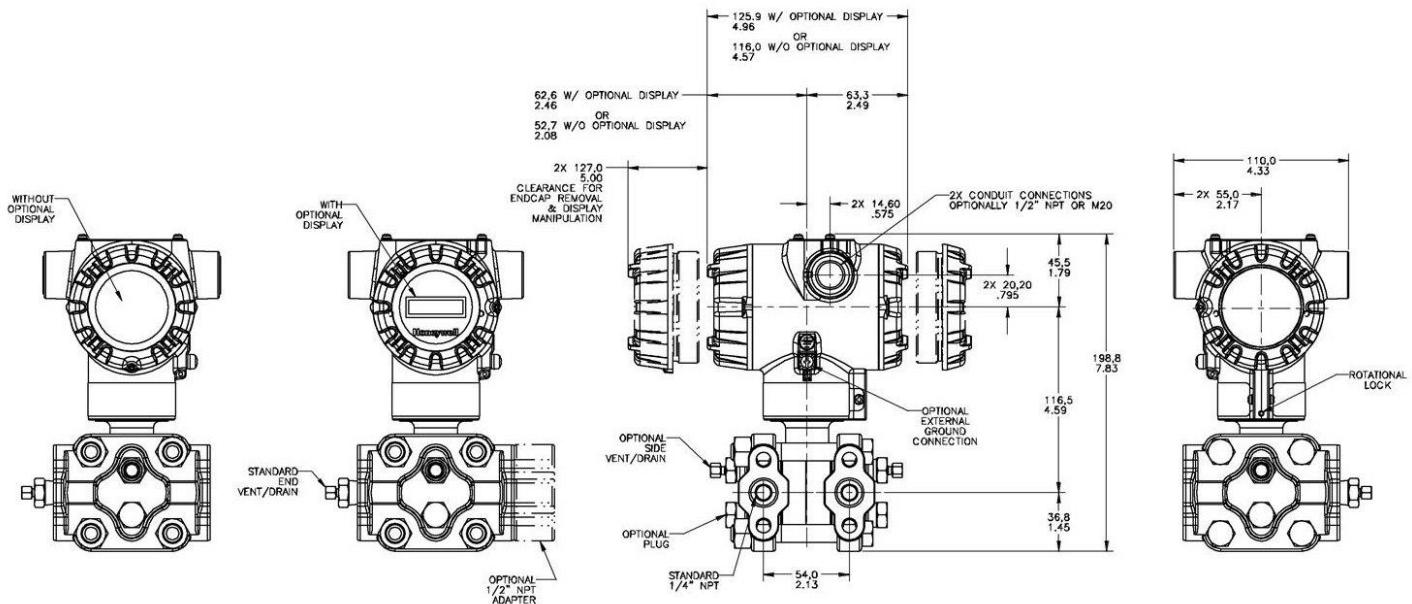
Figure 5 – Typical mounting dimensions for reference

Model Selection Guide

Model Selection Guides are subject to change and are inserted into the specifications as guidance only.

Honeywell

Section 13
Page: SMV8-1
Effective Date: December 01,2022

Model SMV800
Multivariable Pressure Transmitter

Model Selection Guide

34-SM-16-92 Issue 23

Honeywell Propriety

Instructions: Make selections from all Tables Key through IX using column below the proper arrow. Asterisk indicates availability. Letter (a) refer to restrictions highlighted in the restrictions table. Tables delimited with dashes.

Key Number	I	II	III	IV	V	VI	VII	VIII	IX	X	XI
SM _ _ _ _	- _ _	- _	- _ _ _ _ _ _	- _	- _	- _ _ _	- _ _ _	- _	- _ _ _ _	- _ _ _ _ , _ _	- 0 0 0 0

KEY NUMBER	Differential Pressure Range	Static Pressure Range	Selection	Availability			
Measurement Range	-25 to +25 In H20 / -62.5 to +62.5 mbar	0 to 100 psia/0 to 7 bara	SMA810	↓			
	-400 to +400 In H20 / -1000 to +1000 mbar	0 to 1500 psia/ 0 to104 bara	SMA845		↓		
	-400 to +400 In H20 / -1000 to +1000 mbar	-14.7 to 4500 psig/-1 to 310 barg	SMG870			↓	
	-2000 to +2000 In H20 / -5000 to +5000 mbar	-14.7 to 4500 psig/-1 to 310 barg	SMG890				↓

TABLE I	Input type	Selection				
Temperature Sensor Input	Single Input - RTD (2/3/4 Wire)	S1	*	*	*	*
	Single Input - Universal	S2	*	*	*	*

TABLE II	Digital Output	Selection				
Digital Output	No	0	*	*	*	*

TABLE III	Process Head Material	Diaphragm Material	Selection				
a. Process Wetted Heads & Diaphragm Materials	Plated Carbon Steel	316L Stainless Steel	A _ _ _ _ _	*	*	*	*
		Hastelloy® C-276	B _ _ _ _ _		*	*	*
		Monel® 400	C _ _ _ _ _		a	a	a
		Tantalum	D _ _ _ _ _		a	a	a
		Gold Plated Stainless Steel	1 _ _ _ _ _	*	*	*	*
		Gold Plated Hastelloy C-276	2 _ _ _ _ _		*	*	*
		Gold Plated Monel 400	3 _ _ _ _ _		a	a	a
	316 Stainless Steel	316L Stainless Steel	E _ _ _ _ _	*	*	*	*
		Hastelloy® C-276	F _ _ _ _ _		*	*	*
		Monel® 400	G _ _ _ _ _		a	a	a
		Tantalum	H _ _ _ _ _		a	a	a
		Gold Plated Stainless Steel	4 _ _ _ _ _	*	*	*	*
		Gold Plated Hastelloy C-276	5 _ _ _ _ _		*	*	*
		Gold Plated Monel 400	6 _ _ _ _ _		a	a	a
	Hastelloy C-276	Hastelloy® C-276	J _ _ _ _ _		*	*	*
		Tantalum	K _ _ _ _ _		a	a	a
		Gold Plated Hastelloy C-276	7 _ _ _ _ _		*	*	*
	Monel 400	Monel 400	L _ _ _ _ _		a	a	a
		Gold Plated Monel 400	8 _ _ _ _ _		a	a	a
b. Fill Fluid	Silicone Oil 200		_ 1 _ _ _ _	*	*	*	*
	Fluorinated Oil CTFE		_ 2 _ _ _ _	*	*	*	*
	Silicone Oil 704		_ 3 _ _ _ _	*	*	*	*
	Neobee ® M-20		_ 4 _ _ _ _	*	*	*	*
c. Process Connection	None — None (1/4" NPTF female thread Std)		_ _ A _ _ _	*	*	*	*
	1/2" NPT female — Materials to Match Head & Head Bolt Materials Selections[1]		_ _ H _ _ _	*	*	*	*
d. Bolt/Nut Materials	Carbon Steel		_ _ _ C _ _	*	*	*	*
	316 SS		_ _ _ S _ _	*	*	*	*
	Grade 660 (NACE A286) with NACE 304 SS Nuts		_ _ _ N _ _	*	*	*	*
	Grade 660 (NACE A286) Bolts & Nuts		_ _ _ K _ _	p	p	p	p
	Monel K500		_ _ _ M _ _	p	p	p	p
	Super Duplex		_ _ _ D _ _	p	p	p	p
	B7M		_ _ _ B _ _	*	*	*	*

	Head Type	Vent/Drain Location	Vent Material	Selection				
e. Vent/Drain Type/Location	Single Ended	None	None	_ _ _ _ 1 _	*	*	*	*
	Single Ended	Side w/Vent	Matches Head Material[1]	_ _ _ _ 2 _	*	*	*	*
	Single Ended	Side w/Center Vent	Stainless Steel Only	_ _ _ _ 3 _	t	t	t	t
	Dual Ended	End w/Vent	Matches Head Material[1]	_ _ _ _ 4 _	*	*	*	*
	Dual Ended	End w/Center Vent	Stainless Steel Only	_ _ _ _ 5 _	t	t	t	t
	Dual Ended	Side w/ Vent & End w/Plug	Matches Head Material[1]	_ _ _ _ 6 _	*	*	*	*
f. Gasket Material	Teflon® or PTFE (Glass Filled)			_ _ _ _ _ A	*	*	*	*
	Viton® or Fluorocarbon Elastomer			_ _ _ _ _ B	*	*	*	*
	Graphite			_ _ _ _ _ C	*	*	*	*

[1]Except Carbon Steel Heads shall use 316SS Vent/Drain, Plugs & Adapters when required

SMG890
SMG870
SMA845
SMA810
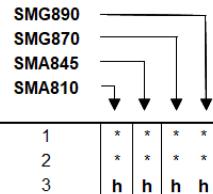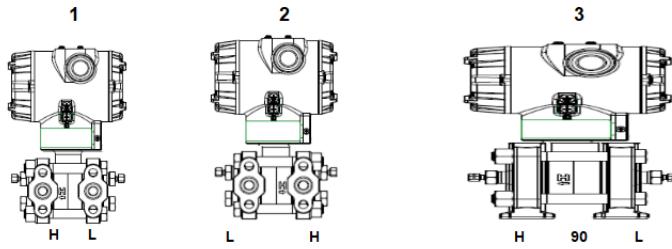
TABLE IV	Meter Body & Connection Orientation			SMA810	SMA845	SMG870	SMG890
Head/Connect Orientation	Standard	High Side Left, Low Side Right² / Std Head Orientation	1	*	*	*	*
	Reversed	Low Side Left, High Side Right² / Std Head Orientation	2	*	*	*	*
	90/Standard	High Side Left, Low Side Right² / 90⁰ Head Rotation	3	h	h	h	h

TABLE V	Agency Approvals (see data sheet for Approval Code Details)						
Approvals All Protocols	No Approvals Required		0	*	*	*	*
Approvals - HART & DE	FM Explosion proof, Intrinsically Safe, Non-incendive, & Dustproof		A	v	v	v	v
	CSA Explosion proof, Intrinsically Safe, Non-incendive, & Dustproof		B	v	v	v	v
	ATEX Explosion proof, Intrinsically Safe & Non-incendive		C	v	v	v	v
	IECEx Explosion proof, Intrinsically Safe & Non-incendive		D	v	v	v	v
	SAEx/CCoE Explosion proof, Intrinsically Safe & Non-incendive		E	v	v	v	
	INMETRO Explosion proof, Intrinsically Safe & Non-incendive		F	v	v	v	
	NEPSI Explosion proof, Intrinsically Safe & Non-incendive		G	v	v	v	
	KOSHA Explosion proof, Intrinsically Safe & Non-incendive		H	v	v	v	
	EAC Customs Union(Russia,Belarus,Kazakhstan) Ex Approval, Flame proof, Intrinsically Safe		I	v	v		
	UATR Flameproof, Intrinsically Safe & Dustproof		K	v	v		
	ATEX/IECEx Explosion proof, Intrinsically Safe & Non-incendive		1	v	v	v	v
Approvals - Modbus	FM Explosion proof, Non-incendive, & Dustproof		6	w	w	w	w
	CSA Explosion proof, Non-incendive, & Dustproof		7	w	w	w	w
	ATEX Explosion proof & Non-incendive		8	w	w	w	w
	IECEx Explosion proof & Non-incendive		9	w	w	w	w

TABLE VI	TRANSMITTER ELECTRONICS SELECTIONS							
a. Electronic Housing Material & Connection Type	Material	Connection	Lightning Protection					
	Polyester Powder Coated Aluminum	1/2 NPT	Yes	C _ _	*	*	*	*
		M20	Yes	D _ _	*	*	*	*
	316 Stainless Steel (Grade CF8M)	1/2 NPT	Yes	G _ _	*	*	*	*
		M20	Yes	H _ _	*	*	*	*
b. Output/ Protocol	Analog Output	Digital Protocol						
	4-20mA dc	HART Protocol		_ H _	*	*	*	*
	4-20mA dc	DE Protocol*		_ D _	u	u	u	u
	NA	Modbus Protocol (RS485) - Direct Process Variables		_ M _	*	*	*	*
	NA	Modbus Protocol (RS485) - Fully Compensated Flow		_ P _	*	*	*	*
c. Customer Interface Selections	Indicator	Ext Zero, Span & Config Buttons	Languages					
	None	None	None	_ _ 0	*	*	*	*
	None	Yes (Zero/Span Only)	None	_ _ A	f	f	f	f
	Advanced	None	EN,DE,FR,IT,ES,RU,TU	_ _ D	*	*	*	*
	Advanced	Yes	EN,DE,FR,IT,ES,RU,TU	_ _ E	*	*	*	*
	Advanced	None	EN, CH, JP	_ _ H	*	*	*	*
	Advanced	Yes	EN, CH, JP	_ _ J	*	*	*	*

TABLE VII	CONFIGURATION SELECTIONS								
a. Application Software	Diagnostics								
	Standard Diagnostics				1 _ _	*	*	*	*
b. Output Limit, Failsafe & Write Protect Settings	Write Protect	Fail Mode	AC Termination	High & Low Output Limits³					
	Disabled	High> 21.0mAdc	N/A	Honeywell Std (3.8 - 20.8 mAdc)	_ 1 _	f	f	f	f
	Disabled	Low< 3.6mAdc	N/A	Honeywell Std (3.8 - 20.8 mAdc)	_ 2 _	f	f	f	f
	Enabled	High> 21.0mAdc	N/A	Honeywell Std (3.8 - 20.8 mAdc)	_ 3 _	f	f	f	f
	Enabled	Low< 3.6mAdc	N/A	Honeywell Std (3.8 - 20.8 mAdc)	_ 4 _	f	f	f	f
	Enabled	N/A	Enabled	Modbus	_ 5 _	g	g	g	g
	Disabled	N/A	Enabled	Modbus	_ 6 _	g	g	g	g
	Enabled	N/A	Disabled	Modbus	_ 7 _	g	g	g	g
	Disabled	N/A	Disabled	Modbus	_ 8 _	g	g	g	g
c. General Configuration	Factory Standard				_ _ S	*	*	*	*
	Custom Configuration (Unit Data Required from customer)				_ _ C	*	*	*	*

² Left side/Right side as viewed from the customer connection perspective

³ NAMUR Output Limits 3.8 - 20.5mAdc can be configured by the customer or select custom configuration Table Vc

* DE protocol does not support Totalizer feature

				SMG890			
				SMG870			
				SMA845			
				SMA810			

TABLE VIII	PV1,PV2 & PV3 CALIBRATION & ACCURACY SELECTIONS						
a. Accuracy and Calibration	Accuracy	Calibrated Range	# of Calibrations				
	Standard	PV1,PV2&PV3 Factory Std	PV1,PV2&PV3 Single Calibration	A	*	*	*	*
		PV1,PV2&PV3 Custom (Unit Data Required)	PV1,PV2&PV3 Single Calibration	B	*	*	*	*
		PV1,PV2&PV3 Custom (Unit Data Required)	PV1&PV2 Dual Calibration	C	*	*	*	*
		PV1,PV2&PV3 Custom (Unit Data Required)	PV1&PV2 Triple Calibration	D	*	*	*	*
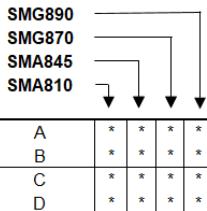
TABLE IX	ACCESSORY SELECTIONS						
a. Mounting Bracket	Bracket Type	Material					
	None	None	0 _ _ _	*	*	*	*
	Angle Bracket	Carbon Steel	1 _ _ _	*	*	*	*
	Angle Bracket	304 SS	2 _ _ _	*	*	*	*
	Angle Bracket	316 SS	3 _ _ _	*	*	*	*
	Flat Bracket	Carbon Steel	5 _ _ _	*	*	*	*
	Flat Bracket	304 SS	6 _ _ _	*	*	*	*
	Flat Bracket	316 SS	7 _ _ _	*	*	*	*
b. Customer Tag	Customer Tag Type						
	No customer tag		_ 0 _ _	*	*	*	*
	One Wired Stainless Steel Tag (Up to 4 lines 26 char/line)		_ 1 _ _	*	*	*	*
	Two Wired Stainless Steel Tag (Up to 4 lines 26 char/line)		_ 2 _ _	*	*	*	*
c. Unassembled Conduit Plugs & Adapters	Unassembled Conduit Plugs & Adapters						
	No Conduit Plugs or Adapters Required		_ _ A0	*	*	*	*
	1/2 NPT Male to 3/4 NPT Female 316 SS Certified Conduit Adapter		_ _ A2	n	n	n	n
	1/2 NPT 316 SS Certified Conduit Plug		_ _ A6	n	n	n	n
	M20 316 SS Certified Conduit Plug		_ _ A7	m	m	m	m
	Minifast® 4 pin (1/2 NPT) (not suitable for X-Proof applications)		_ _ A8	n	n	n	n
	Minifast® 4 pin (M20) (not suitable for X-Proof applications)		_ _ A9	m	m	m	m

TABLE X	OTHER Certifications & Options: (String in sequence comma delimited (XX, XX, XX,....)						
Certifications & Warranty	None - No additional options	00	*	*	*	*	
	NACE MR0175; MR0103; ISO15156 Process wetted parts only	FG	*	*	*	*	b
	NACE MR0175; MR0103; ISO15156 Process wetted and non-wetted parts	F7	c	c	c	c	
	EN10204 Type 3.1 Material Traceability	FX	*	*	*	*	
	Certificate of Conformance	F3	*	*	*	*	b
	Calibration Test Report & Certificate of Conformance	F1	*	*	*	*	
	Certificate of Origin	F5	*	*	*	*	
	FMEDA (SIL 2/3) Certification	FE	j	j	j	j	
	Over-Pressure Leak Test Certificate (1.5X MAWP)	TP	*	*	*	*	
	Cert Clean for O_2 or CL_2 service per ASTM G93	OX	e	e	e	e	
	PMI Certification[1]	PM	*	*	*	*	
	Extended Warranty Additional 1 year	01	*	*	*	*	
	Extended Warranty Additional 2 years	02	*	*	*	*	
	Extended Warranty Additional 3 years	03	*	*	*	*	b
	Extended Warranty Additional 4 years	04	*	*	*	*	
	Extended Warranty Additional 15 years	15	*	*	*	*	

TABLE XI	Manufacturing Specials						
Factory	Factory Identification	0000	*	*	*	*	

MODEL RESTRICTIONS

Restriction Letter	Available Only with		Not Available with	
	Table	Selection(s)	Table	Selection(s)
a			X	F7, FG
c	IIId	_ _ _ N,K,D,B _ _ _	IIIa	C,D,3,G,H,6,K,L,8 _ _ _ _ _ _
e	IIIb	_ 2 _ _ _ _ _		
f			VIb	_ M, P _
g			VIb	_ H, D _
h			IIIe	4, 5, 6
			IXa	1,2,3,5,6,7 _ _ _
j	VIb	_ H _	VIIb	_ 1,2,5,6,7,8 _
m	VIa	D, H _ _		
n	VIa	C,G _ _		
p			V	B- No CRN number available
t			IIIa	J, K, 7, L, 8
u			VIIIa	C,D
v	VIb	_ H, D _		
w	VIb	_ M, P _		
b	Select only one option from this group			

[1]The PM option is available on all Smartline Pressure Transmitter process wetted parts such as process heads, flanges, bushings and vent plugs except plated carbon steel process heads and flanges. PM option information is also available on diaphragms except Gold plated and STG and STA in-line construction pressure transmitters.

FIELD INSTALLABLE/ACCESSORY PARTS

Description	Kit Number
Integrally Mounted Advanced Indicator Kit (EN,DE,FR,ES,IT,RU,TU - compatible with HART & DE Electronic Modules)	50049846-506
Integrally Mounted Advanced Indicator Kit (EN, CH, JP - compatible with HART & DE Electronic Modules)	50087087-503
Integrally Mounted Advanced Indicator Kit (EN,DE,FR,ES,IT,RU,TU - compatible with Modbus Electronic Modules)	50049846-507
Integrally Mounted Advanced Indicator Kit (EN, CH, JP - compatible with Modbus Electronic Modules)	50087087-507
Terminal Strip w/o Lightning Protection Kit for HART or DE Modules	50086421-521
Terminal Strip w/Lightning Protection Kit for HART or DE Modules	50086421-523
Terminal Strip w/o Lightning Protection Kit for Modbus Module	50086421-531
Termianl Strip w/Lightning Protection Kit for Modbus Module	50086421-532
HART Electronics Module	50098718-501
HART Electronics Module w/connection for external configuration buttons	50098718-502
DE Electronics Module	50098718-503
DE Electronics Module w/connection for external configuration buttons	50098718-504
Modbus Electronics Module w/connection for external configuration buttons	50098718-510
Modbus Electronics Module	50098718-509

Note P - For part number pricing please refer to WEB Channel.

PRODUCT MANUALS

Description	Part Number
Product Manual SMV 800 Smart Transmitter User Manual - English	34-SM-25-03
Product Manual SMV 800 Smart Transmitter HART/DE Communications Manual - English	34-SM-25-06
Product Manual SMV800 Smart Transmitter Modbus Communications Manual - English	34-SM-25-09

All product documentation is available at www.process.honeywell.com.

Sales and Service

For application assistance, current specifications, pricing, or name of the nearest Authorized Distributor, contact one of the offices below.

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engine http://bit.ly/2N5Vldi

Specifications are subject to change without notice.

For more information
To learn more about SmartLine Transmitters,
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